

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **minor municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq. The discharge results from the operation of a Fluidyne® sequencing batch reactor (SBR) activated sludge sewage treatment, UV disinfection and cascade aeration of effluent prior to discharge. This permit action consists of reissuance of the permit for a term of five years with updated boilerplate special conditions, and with limitations on pH, biochemical oxygen demand (BOD₅), total suspended solids (TSS), dissolved oxygen (DO), total kjeldahl nitrogen (TKN), fecal coliform and E. coli. (SIC Code: 7041 - Organization Hotels & Lodging Houses & 4952 - sewage treatment)

1. **Facility Name and Address:**

Eagle Eyrie Baptist Conference Center STP - 1 Eagle Eyrie Drive, Lynchburg, VA 24503
Virginia Baptist Mission Board, 2828 Emerywood Pkwy, Richmond, VA 23294-3718

Location: facility is on the East side of Virginia Route 501 approximately 2.5 miles north of the community of Boonsboro, Bedford County, Virginia

2. **Permit No.** VA0027553

Expiration Date: July 27, 2008

3. **Facility Contact:** Name: Mr. Jeffery A. Poff

Telephone No.: (434)384-2211

Title: Director of Physical Plant Operations

Permittee Contact: Name: Mr. Eddie Stratton

Telephone No.: (804)915-5000 ext. 1270

Title: Treasurer/Business Manager, Virginia Baptist Mission Board

2828 Emerywood Pkwy, Richmond, VA 23294-3718

4. **Application Complete Date:** January 11, 2008

Permit Drafted By: Susan K. Edwards

Date: June 10, 2008

DEQ Regional Office: West Central Regional Office

Reviewed By: Kip D. Foster, WCRO Water Permit Manager

Date: June 16, 2008

Public Comment Period Dates: June 21 through July 22, 2008

5. **Receiving Stream Name:** Wells Creek, unnamed tributary to James River (River mile: 1.42)

Basin: James River Sub-basin: James River (Upper) Section: 11h

Class: III, Non-tidal Piedmont Zones Waters Special Standards: PWS

7-Day, 10-Year Low Flow (7Q10): 0.0 MGD 7Q10 High Flow months: Jan. - May

1-Day, 10-Year Low Flow (1Q10): 0.0 MGD 1Q10 High Flow months: Jan. - May

30-Day, 5-Year Low Flow (30Q5): 0.0 MGD Harmonic Mean Flow: 0.0 MGD

30-Day, 10-Year Low Flow (30Q10): 0.0 MGD

Tidal: No

303(d) Listed? No

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** Class III

7. **Reliability Class:** II

8. **Permit Characterization:**

(X) Private () Federal () State () POTW (X) PVOTW

() Possible Interstate Effect () Interim Limits in Other Document

9. **Wastewater Treatment System:** Attachment A contains treatment plant schematic and site visit report copies.

Discharge Description			
Outfall	Discharge Sources	Treatment	Design Flow
001	Domestic wastewater generated by a highly variable population of up to 1000 guests and staff at the Eagle Eyrie Baptist Conference Center campus.	Fluidyne® sequencing batch reactor (SBR) (mechanical & bar screen for primary treatment, equalization tank, influent pump station, twin SBR tanks, decant tank, pumped to a sand filter), ultraviolet light disinfection, flow monitoring, and cascade aeration. Covered sand sludge drying beds.	39,500 gallons per day

Part I. Virginia Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Eagle Eyrie Baptist Conf. Center STP

NPDES Permit Number: VA0027553

Permit Writer Name: Susan K. Edwards

Date: June 11, 2008

Major [] **Minor** [x] **Industrial** [] **Municipal** [x] **TMDL Related** []

I.A. Draft Permit Package Submittal Includes:	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit - entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. Priority Pollutant Screening to determine parameters of concern?	X		
6. Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?	X		
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the record or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the record or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to an impaired water (i.e., 303(d) listed water)?		X	

I.B. Permit/Facility Characteristics - cont.	Yes	No	N/A
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated? No PWS intakes within 15 miles downstream.	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Has previous permit, application, and fact sheet been examined?	X		

Part IIa. NPDES Draft Permit Checklist
Region III NPDES Permit Quality Checklist - For POTWs

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits - General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS and pH?	X		
2. Does the permit require at least 85 percent removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly, daily maximum) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		

II.D. Water Quality-Based Effluent Limits - cont.	Yes	No	N/A
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the record indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity (if applicable)?			X

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X

II.F. Special Conditions -cont.	Yes	No	N/A
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfalls(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combines Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

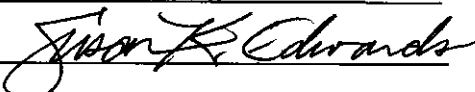
II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24 hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X	

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department and/or made available to the Department, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name Susan K. Edwards

Title Environmental Engineer Senior

Signature 

Date June 11, 2008

10. **Sewage Sludge Use or Disposal:** A VPDES Sewage Sludge Application Form was submitted in the application package. Sludge from the sand drying beds of the wastewater treatment facility are disposed of at the Bedford County Waste Management Facility.
11. **Discharge Location Description:** Eagle Eyrie Baptist Conference Center and STP are located in Bedford County on the east side of Route 501, approximately 2.5 miles north of the community of Boonsboro in Campbell County. The treatment plant is located in a leveled niche just as Route 501 crests over the ridgeline on the northeastern side of Fleming Mountain. A portion of the USGS topographic map, which indicates the discharge location and other items of interest is included in **Attachment A**. There are no significant (large) dischargers to the receiving stream or water intakes within the immediate area.

Name of Topo: Boonsboro (107A)

Discharge: N 37°29'03", E 79°16'41"

12. **Material Storage:** No materials were observed as being stored uncovered in a location that exposes them to rainfall during the site visit, which might present a risk of reaching State waters.

13. **Ambient Water Quality Information:**

The receiving stream at the point of discharge as reviewed on the USGS quadrangle for the area is depicted as a dashed line, which represents intermittent flow. The DEQ Office of Water Quality Assessments and Planning prepared a Flow Frequency Determination Memorandum dated March 23, 1998. The Memorandum gave the flows for the unnamed tributary has 0.0 cfs for 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10 and the harmonic mean. The same memo gave flows for the first perennial point of the unnamed tributary. The memo notes that the flows do not address any springs that may lie upstream of a given point. A copy of the memo is provided in **Attachment A**. No additional information was available at this time that would cause this flow frequency to be superseded.

The receiving water body is unnamed tributary to the James River. The receiving water body is within Section 11h of the James River of the State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-430). The receiving stream is Class III - Non-tidal Piedmont Zones Water with Public Water Supply special standards. The outfall is at river mile 1.42.

The Eagle Eyrie Conference Center STP falls into the James River basin/James River watershed (VAW-H01R). The 2006 Impaired Waters (Categories 4 and 5) includes a portion of the segment as impaired for PCB in fish tissue and for recreational use due to bacteria levels. The bacterial impairment is located at Reed Creek which is a different sub-watershed than the discharge. The PCB in fish tissue listing is for the James River mainstem without the tributaries. The PCB TMDL study has is scheduled to be developed in 2020. Copies of the 2006 Impaired Waters Fact Sheet for the two segments are provided in **Attachment A**.

There are no DEQ stream monitoring stations in the immediate vicinity of the receiving waterbody. Monitoring data from stations 2-POL000.04 is available as the nearest stream monitoring for pH, temperature and hardness for establishing effluent limitations. Station 2-POL000.04 is located at the Route 650 bridge over the Pedlar River in Amherst County. Other stations are located along the James River, but the water quality of those stations are influenced by a much larger drainage area upstream than the Pedlar River monitoring station.

6. **Antidegradation Review and Comments:** Tier I X Tier II Tier III

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier I, existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier II water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier II waters is not allowed without an evaluation of the economic and social impacts. Tier III water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The receiving waterbody, UT to the James River, at the point of discharge is not included on the list of impaired waters. As an intermittent stream it is not expected that the water quality is better than the standards, thus, the unnamed tributary is determined to be a **Tier I** water. Therefore, existing uses of the water body and the water quality to protect these uses must be maintained. Water quality based permit limits are written to be better than or equal to the water quality standards.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated.

The antidegradation baseline for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:

"WQS" = Numeric criterion listed in 9 VAC 25-260-5 et seq. for the parameter analyzed

"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

These "antidegradation baselines" become the new water quality criteria in Tier II waters and effluent limits for future expansions must be written to maintain the antidegradation baselines for each pollutant. The outfall 001 discharge is existing and there is no indication of any proposed increase in the discharge of pollutants via this outfall. As the facility is not proposing any increase in the loading of any pollutants over historical levels, permit limits are in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review and associated effluent limits analyses, below, were conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and comply with the antidegradation policy contained in Virginia's Water Quality Standards set forth in 9 VAC 25-260-30.

7. **Site Inspection:** March 26, 2008 Performed by: Troy Nipper, Enforcement & Compliance Specialist Sr
Attachment A contains a copy of the site visit memorandum.
- 16 **Effluent Screening and Limitation Development:** In accordance with the July 28, 2003 VPDES permit, the effluent has been monitored for compliance with flow, pH, BOD₅, TSS, dissolved oxygen, total kjeldahl nitrogen and E. coli bacterial limitations. Effluent limitations and monitoring requirements are based on Federal Effluent Guidelines 40 CFR 133, Virginia's water quality standards (9 VAC 25-260-5 et seq.) (specifically, DEQ Guidance Memorandum 00-2011), the previous permit, the VPDES Permit Manual and best engineering judgement.

A review of effluent data from the last three-year period as submitted on Discharge Monitoring Reports indicate that the average daily discharge has recently reported higher than the 39,500 gallons-per-day design of the plant. For most parameters limited by the permit the effluent is in compliance. However, there are problems with compliance occasionally. See **Attachment B** of a summary of monitoring data.

The 1998 VPDES permit reissuance was prepared in anticipation of the installation of a new treatment plant with no increase in design flow from the Imhoff tank and spray irrigation system that had served the Conference Center. The BOD₅, TKN and DO limitations were based on the Regional Water Quality Model for Free Flowing Streams, Version 3.2. The model evaluation was prepared for the 1993 reissuance of the permit. This model is specifically applicable to continuous discharges to free flowing streams. It can be used to establish Best Professional Judgement (BPJ) limitations. In this case professional judgement is that application of the Model is appropriate. The review of discharge benchsheets from the past year indicate discharge is not every day, but in most weeks that there are guests (during summer months - higher flow to be treated) there is a discharge daily.

Application Data - Effluent testing data submitted as part of the application was reviewed to determine if there is "suitable data" for analysis. Suitable data is that which is quantifiable and for which there are water quality standards in the state. The evaluation is of parameters that are not currently limited in this permit to assess the need to include limit as part of this reissuance. All application data submitted except for temperature are limited in the permit and will continue with this reissuance.

The flow of the receiving stream at the perennial point during critical flow conditions was not evaluated at this permit reissuance. There are no limit re-evaluations performed that require this information and therefore the Flow Frequency determination of the previous permit has been brought forward. The Flow Frequency Memorandum is found in **Attachment A**.

The permit limitations are based on the receiving water body flow values being zero. Therefore, all water quality standards based effluent limitations are set at the end of the discharge pipe. Tier II waterbody antidegradation wasteload allocation baselines were calculated at the 2003 reissuance for use if the treatment plant is expanded in the future. The existing discharge is not new or expanding at this time. Therefore, water quality based effluent limitations for the discharge were based on a non-antidegradation wasteload allocation spreadsheet calculated at the 2003 reissuance.

A. Mixing Zone - The receiving water body is an intermittent unnamed tributary to the James River. The receiving waters are assumed to be completely mixed because in critical conditions the effluent is the stream. Mixing zones may be allowed in perennial waters, provided the antidegradation requirements for the waters are met. The agency Mixing Zone program, MIXER version 2.0.4, has been used to determine the antidegradation baselines for the perennial section. The program determines the percentage of the receiving stream flow that could be used in the antidegradation wasteload allocation calculations. The program indicates that 100 percent of the 1Q10 and 7Q10 may be used for calculating wasteload allocations (WLAs). A copy of the MIXER software output from the 2001 permit modification is provided in **Attachment B**.

B. Effluent Limitations for Conventional Pollutants

Flow - The treatment plant has a design capacity of 39,500 MGD. The permit does not include a flow limitation, but in accordance with the current VPDES Permit Manual flow is to be estimated daily. Flow from the discharge is daily during times the conference center has guests, but intermittent because the sequencing batch reactor treatment system is a batch process.

pH - Limitations for pH are 6.0 S.U. minimum and 9.0 S.U. maximum according to the WQS 9 VAC 25-260-50 as a Class III Non-tidal Piedmont Zones Waters and Federal Effluent Guidelines' secondary treatment requirements (40 CFR 133). Monitoring is once per day that there is a discharge by grab sample at the discharge from the treatment plant.

Biological Oxygen Demand (BOD₅) Dissolved Oxygen (DO) and Total Kjeldahl Nitrogen (TKN) - As noted in the introduction to this section of the Fact Sheet, the Regional Water Quality Model for Free Flowing Streams, Version 3.2, was used to evaluate the effects of the discharge on the dissolved oxygen levels in the receiving stream. Modeling was performed for the 1993 permit reissuance and has been brought forward with this Fact Sheet in **Attachment B**. Applicability to this treatment system is considered a BPJ basis. The model for the 1993 reissuance evaluated a single segment downstream of the discharge. The intermittent segment following the discharge, in accordance with antidegradation policy, must meet the DO water quality criteria (5.0 mg/l) in 9 VAC 25-260-50. The perennial section classified as Tier II waters was not modeled. Effluent temperature was assumed at 22 °C because there was no effluent data at the time. The treatment plant flow of 0.0395 MGD was used as a model input together with various effluent concentrations for BOD₅ and TKN levels and a DO limit of 6.0 mg/l in recognition of the cascade aeration of the effluent. The model output files reflect a successful intermittent segment run with 18 mg/l BOD₅ and TKN at 6.0 mg/l. The successful model run applied effluent limits of 6.0 mg/l for DO, 19 mg/l for BOD₅ and 5.0 mg/l for TKN. The model predicted DO levels to remain above 5.0 mg/l in the intermittent segment.

BOD₅ is limited at **18 mg/l** as a monthly average and **27 mg/l** as a weekly maximum, with monitoring at once per discharge month by grab sample. In addition, the facility is to meet a minimum technology based requirement for 85% removal efficiency for BOD₅. Effluent DO limit is **6.0 mg/l** as a minimum with monitoring once per discharge day by grab sample. TKN limits are set at **6 mg/l** as a monthly average and **9 mg/l** as a weekly maximum. TKN monitoring is at once per discharge month by grab sample. See attached Model printouts of Data File Summary and Responses for each modeled segment in **Attachment B**.

Total Suspended Solid (TSS) - Secondary treatment standards as mandated by the federal technology-based guidelines (40 CR Part 133.102) are applicable to the TSS limit. Effluent limits of **30 mg/l** as a **monthly average** and **45 mg/l** as a **weekly average** have been required for TSS. Monitoring of TSS is at once per discharge month by grab sample. In addition, the facility is to meet a minimum technology based requirement for 85% removal efficiency for TSS.

Bacteria, E. coli - The E. coli limitation is a monthly average of **126 N/100 ml** (geometric mean) to in accordance with the bacterial Water Quality Standard of 9 VAC 25-260-170. The E. coli limitation monitors disinfection of the ultraviolet light (UV) disinfection system. Based on GM#03-2007, monitoring is required 1 day per week between the hours of 10 a.m. to 4 p.m.

C. Effluent Limitations for Toxic Pollutants

Wasteload Allocations (WLAs), were calculated at the last reissuance for the intermittent stream segment using receiving stream flows of zero. The 2003 update was made to consider if pH adjustment had any effect on limitations. Mean hardness value of 46 mg/l was taken from the nearby STORET monitoring station 2- POL000.04. Plant flow was input at 0.0395 MGD together with 90th percentile temperature (25.5 °C) and 90th percentile pH (8.2) from effluent data. The WLA spreadsheet was used in reevaluating the ammonia limit. Limit development is based on acute toxicity as the sequencing batch reactor treatment system discharges intermittently. With receiving stream flows of zero, toxicity limits must be met at the end of the discharge pipe.

Antidegradation Wasteload Allocations (AWLAs) have been recalculated for the perennial segment as needed to comply with antidegradation requirements for establishing baselines for toxic parameters should the discharge be expanded in the future. Copies of software outputs are included in the **Attachment B**.

Ammonia as Nitrogen - The ammonia limit was reevaluated in 2003 because the treatment system includes pH adjustment, which effects the toxicity of ammonia in the effluent. The WLA results for ammonia, 3.66 mg/l acute, was input into the agency Statistically Derived Permit Limits version 2.0.4 (STATS) statistical software. In accordance with GM 00-2011, in order to force a limit calculation for ammonia, a single datum of 9 mg/l was used for ammonia. The STATS output indicates an ammonia-as-nitrogen toxic limit for the effluent would be 3.66 mg/l as a weekly average and a monthly average. Since the TKN limit discussed above of 6.0 mg/l correlates to an ammonia-as-nitrogen concentration of 3.0 mg/l allowing for 3.0 mg/l refractory organic nitrogen compounds and the ammonia limit would be 3.66 mg/l, the TKN limit will be used to control nitrogenous BOD and ammonia toxicity. This is in accordance with agency guidance found on page 45 of GM 00-2011. No limit is needed for ammonia toxicity.

Other Toxics - No other suitable toxics data is available. In accordance with Agency guidance as a discharge with a design capacity less than 40,000 gallons-per-day, no additional water quality standards monitoring will be required.

Table II - Basis for Effluent Limitations

PARAMETER	BASIS
Flow	NA – monitoring only
pH	1 (40 CFR 133) & 2 (9 VAC 25-260-50)
BOD ₅	3 – BPJ application of DO model
TSS	1 - Secondary Treatment (40 CFR 133)
Dissolved oxygen	3 – BPJ application of DO model
Total kjeldahl nitrogen	3 – BPJ application of DO model
E. coli	2 - WQS bacteria (9 VAC 25-260-170)

1. Federal Effluent guidelines – cite CFR
2. Water Quality-Based Limits: - show calculations or cite WQM plan reference
3. Best Engineering Judgment: - provide narrative rationale
4. Other (e.g. wasteload allocation model): - specify & document with model output or WLA from TMDL or basin plan

17. **Basis for Sludge Use and Disposal Requirements:** A VPDES Sewage Sludge Application Form was submitted in the application package related to handling of sludge from the drying beds. The permittee transports sludge to the Bedford County solid waste landfill on an as-needed basis. A Sludge Reopener special condition has been included in the event regulations regarding sludge change to effect this type of operation.
18. **Antibacksliding Statement:** All limitations are as stringent as the previous permit. Accordingly the anti-backsliding provisions of 9 VAC 25-31-220 L are satisfied.
19. **Compliance Schedule:** (9 VAC 25-31-250) There are no new or lower limits included in the reissuance of the permit. Therefore, there is no compliance schedule needed.
20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.
 - a. **95% Capacity Reopener** (Part I.B.1.) - Rationale: Required by 9 VAC 25-31-200 B2 for all POTW and PVOTW permits.
 - b. **CTC, CTO Requirement** (Part I.B.2) - Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790.
 - c. **O&M Manual Requirement** (Part I.B.3) - Rationale: Required by Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E. The O&M Manual will require updating at a minimum to include bacterial monitoring.
 - d. **Licensed Operator Requirement** (Part I.B.4) - Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 D and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators. This Special Condition requires staffing with an operator with a Class III license.
 - e. **Reliability Class** (Part I.B.5.) - Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities. The Reliability Class has been designated as Class II in agreement with the OWE recommendation for the facility.
 - f. **Sludge Reopener** (Part I.B.6.) - Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C 4 for all permits issued to treatment works treating domestic sewage.
 - g. **Compliance Reporting Under Part I A** (Part I.B.7) - Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

- h. **Sludge Use and Disposal (Part I.B.8.)** - Rationale: VPDES Permit Regulations section 9 VAC 25-31-100 P: 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the VPA Permit Regulations, 9 VAC 25-32-10 et seq.
 - i. **Treatment Works Closure Plan (Part I.B.9.)** - Rationale: State Water Control Law § 62.1-44.19. This condition requires the owner to submit a closure plan for review and approval if the treatment works is replaced or closed.
 - j. **Conditions Applicable to All VPDES Permits (Part II)** - Rationale: VPDES Permit Regulations, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.
21. **Changes to Permit:** There have been no changes in the effluent limitation values or monitoring frequencies from the 2003 permit except that the units for BOD₅ and TSS limits have changed from kg/day to grams/day.
- Deletions or Modifications to special conditions from the 2003 permit (Conditions referenced by numbering in 2003 permit.)
- B. Bacterial Effluent Limitations and Monitoring Requirements - removed with updated to 40CFR136. Monitoring methods and holding times for E. coli are now addressed.
 - C.1. Quantification Levels and Reporting Requirements under Part I.A and I.B - replaced with updated renamed special condition B.8 in accordance with the latest revisions to the VPDES Permit Manual.
 - C.2. 95% Capacity Reopener – replaced with updated special condition B.1. in accordance with the latest revisions to the Permit Manual.
 - C.3. O&M Manual Requirement - replaced with updated special conditions B.2 and 3 in accordance with the current edition of VPDES the Permit Manual. Also reflects the adoption of the SCAT regulations by DEQ.
 - C.7 Sludge Use and Disposal - renumbered as special condition B.9.
 - C.8 Treatment works closure Plan - replaced with updated special condition B.10. in accordance with the latest revisions to the Permit Manual.
- Additions to the special conditions from the 2003 permit - No new special conditions have been added.
22. **Variances/Alternate Limits or Conditions:** The permittee requested a waiver from application testing requirement for effluent fecal coliform (EPA Form 2A, item A.12). The bacterial standard for freshwater in Virginia is E. coli therefore the fecal coliform information is not needed for permit limitation development. In addition, a waiver was requested for sludge analysis as item A.8 of the VPDES Sewage Sludge Permit Application Form. The sludge will be disposed of in a landfill and the analysis will not be needed for permit development. Therefore a waiver for these application items were granted.
- No variances or alternatives to required permit conditions/limitations are within the permit. No variances from technology guidelines or water quality standards or from VPDES permit manual guidance are known to be used in the development of this permit.
23. **Regulation of Users:** (9 VAC 25-31-280 B 9) There are no industrial users contributing to the treatment works. The Bedford County School Board owns and The County PSA operates the permitted treatment works and control the nature of sewage treated by the plant.
24. **Public Notice Information required by 9 VAC 25-31-280 B:**
- All pertinent information is on file and may be inspected, and copied by contacting Susan Edwards at: Virginia DEQ, West Central Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019
Telephone no. (540)562-6700 or skedwards@deq.state.va.us

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. Additional Comments:

Previous Board Action - none.

Staff Comments - The discharge is not controversial. The WCRO Water Permit Support Group notes that the discharge is in conformance with the existing planning document for the area.

Public Comments - No comments were received during the Public Notice.

Review of Reduced Monitoring Frequency - Guidance Memos 00-2011 and 98-2005 allows for reduced monitoring at facilities with excellent compliance histories. To qualify for consideration of reduced monitoring, the facility should not have been issued any Warning Letters (WLs), NOV's, or NULEs, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. There have been numerous WLs to the permittee in the last 3-year period (March 2008, Nov. 2007, March 2007 and Feb. 2006). Having received the warning letters within the last three years the facility is not eligible for reduction of monitoring frequencies at this time.

26. **303(d) List:** The Eagle Eyrie Conference Center STP falls into the James River basin/James River watershed (VAW-H01R). The 2006 Impaired Waters (Categories 4 and 5) includes a portion of the segment as impaired for PCB in fish tissue and for recreational use due to bacteria levels. The bacterial impairment is located at Reed Creek which is a different sub-watershed than the discharge. The PCB in fish tissue listing is for the James River mainstem without the tributaries. The PCB TMDL study is scheduled to be developed in 2020. Copies of the 2006 Impaired Waters Fact Sheet for the two segments are provided in **Attachment A**. The discharge is not in the impaired segment of the waterbody.

**VPDES Permit VA0027553
Eagle Eyrie STP
Reissuance July 2008**

ATTACHMENT A

1. Flow Frequency Memo of March 23, 1998
2. Portion of Boonsboro USGS quadrangles
3. Portion of site plan of treatment plant vicinity from O&M Manual.
4. Excerpt from the 2006 & 2008 List of Impaired (Category 4 & 5) Waters for Reed Creek. Discharge is not on the impaired section listed for VAW-H01R.
5. Excerpt from 2006 Assessment Information for James River impairment for PCB in fish tissue.
6. STORET data from Station 2-POL000.04 for pH and hardness.
7. A year of daily effluent pH and temperature data - unsorted and sorted used in 2003 limit development. Effluent monthly ammonia data
8. 3-year summary of effluent data from DMRs - flow, pH, BOD₅, TSS, TKN, DO & E. coli
9. Site visit report of June 6, 2003 (May 19, 2003 visit)

JTH

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Eagle Eyrie STP - VA#0027553

TO: Bill Woods, WCRO

FROM: Paul E. Herman, P.E., WQAP *Paul*

DATE: March 23, 1998

COPIES: Ron Gregory, Charles Martin, File

The Eagle Eyrie STP discharges to an unnamed tributary of the James River near Lynchburg, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is shown as intermittent on the USGS Boonsboro Quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and harmonic mean. Flow frequencies have been determined for the first perennial reach downstream of the discharge point.

The USGS operated a continuous record gage on the Pedlar River near Pedlar Mills, VA (#02025000) from 1942 to 1956. The gage was located at the Route 635 bridge in Amherst County, VA. The flow frequencies for the gage and the perennial point are presented below. The values at the perennial point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying upstream.

Pedlar River near Pedlar Mills, VA (#02025000):

Drainage Area = 91 mi²

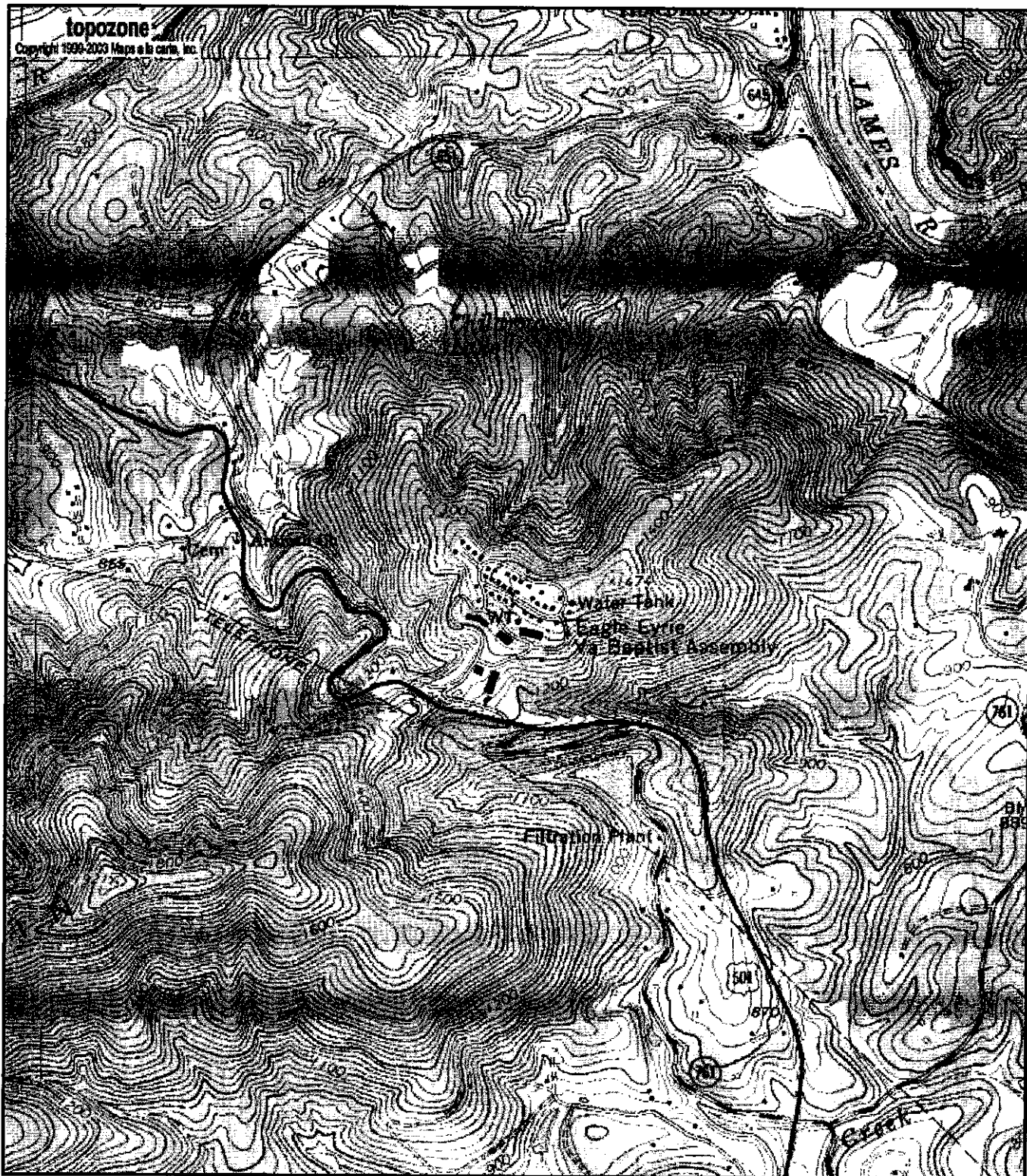
1Q10 = 3.3 cfs	High Flow 1Q10 = 11 cfs
7Q10 = 3.7 cfs	High Flow 7Q10 = 14 cfs
30Q5 = 7.9 cfs	HM = 31 cfs

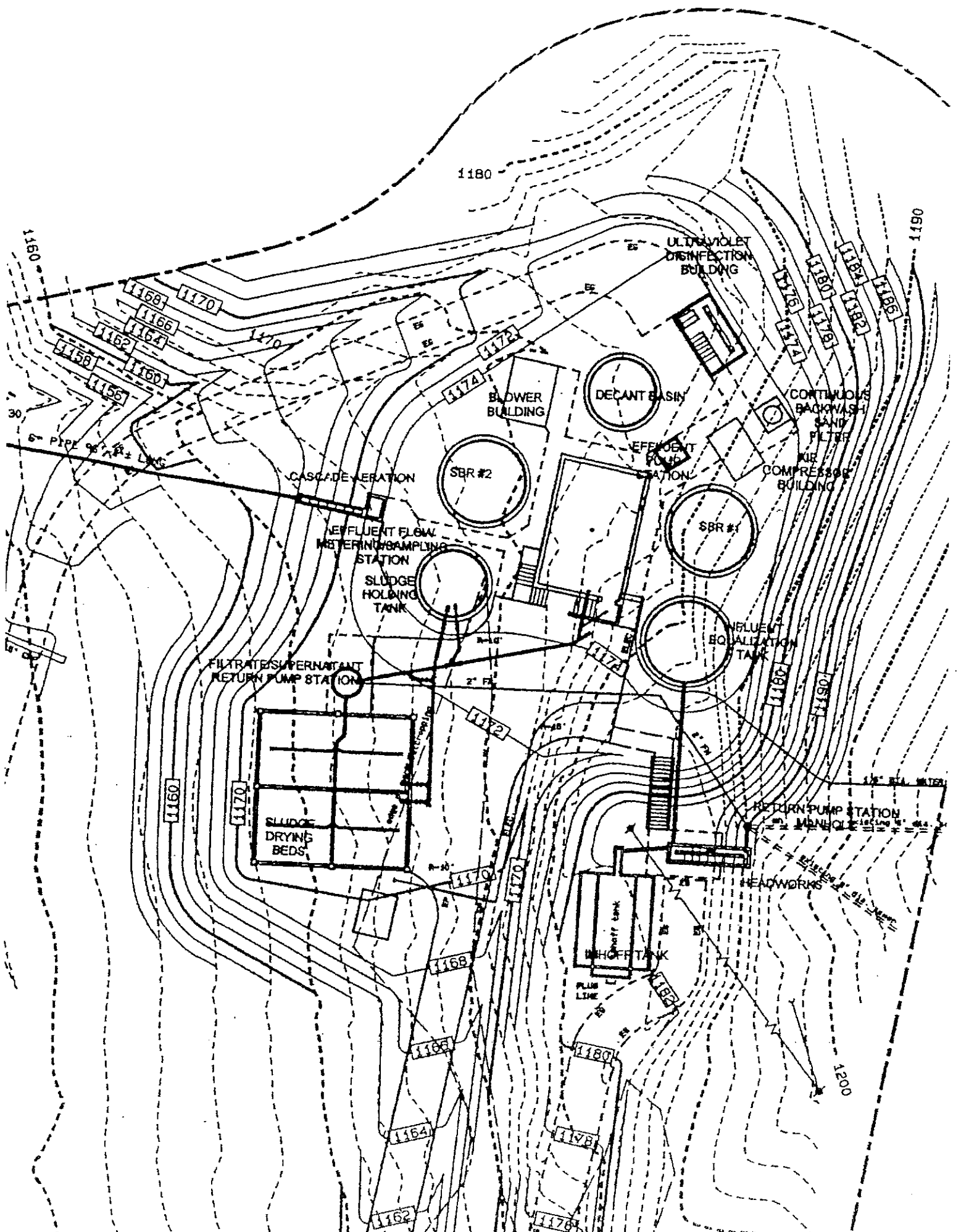
Unnamed tributary at perennial point:

Drainage Area = 0.20 mi²

1Q10 = 0.007 cfs	High Flow 1Q10 = 0.024 cfs
7Q10 = 0.008 cfs	High Flow 7Q10 = 0.031 cfs
30Q5 = 0.017 cfs	HM = 0.068 cfs

The high flow months are December through May. If you have any questions concerning this analysis, please let me know.







2006 Impaired Waters

Categories 4 and 5 by City / County

James River Basin

Fact Sheet prepared for: Bedford Co.*

Cause Group ID: H01R-01-BAC

Reed Creek

2006 TMDL Group Codes: 00017

Location: The upper limit is the headwaters in the Jefferson National Forest on the Sedalia Quad (intersection of State Routes 638 and 764). The impairment ends at the mouth of Reed Creek on the James River below Big Island, Virginia (Snowden, Sedalia and Big Island Quads).

City / County: Bedford Co

Use(s): Recreation

Cause(s) /

VA Category: Escherichia coli / 4A

The Reed Creek Bacteria TMDL Load Duration Study received US EPA approval on 6/21/2004 [Fed. ID. 7763 / 21565] and SWCB approval on 12/02/2004 (formerly VAW-H01R-01). Three stations are located in these impaired waters. 2-RED000.16 (Off Route 501), the original listing station, and two additional stations 2-RED005.36 (Route 637 Bridge) and 2-RED008.32 (Route 122 Bridge). Escherichia coli (E.coli) replaces fecal coliform bacteria as the indicator with sufficient E.coli data as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters].

2-RED008.22- (Rt. 122 Bridge) Four of 15 E.coli samples exceed the 235 cfu/100 ml WQS instantaneous criterion. Values in excess of the criterion range from 350 to 1000 cfu/100 ml.

2-RED005.36- (Rt. 637 Bridge) E.coli exceedences of the instantaneous criterion are found in nine of 15 samples where exceeding values range from 460 to 1700 cfu/100 ml.

2-RED000.16- (Off Rt. 501) Six of 24 E.coli samples exceed the instantaneous criterion. Values in excess of the criterion range from 250 to 500 cfu/100 ml.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-H01R_RED01A00 / Reed Creek Lower / Reed Creek mainstem from its mouth on the James River upstream to the intersection of State Routes 638 and 764.	4A Escherichia coli	2004	2004	12.27

Reed Creek	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
Escherichia coli - Total Impaired Size by Water Type:			12.27

Sources:

Livestock (Grazing or Feeding Operations)

On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)

Unspecified Domestic Waste

Wastes from Pets

Wildlife Other than Waterfowl

*The narrative above describes the entire extent of the Impairment. Sizes presented may not represent the total overall size of the impairment. Impaired waters may cross or share jurisdictional boundaries and as a result are not strictly limited to a specific jurisdictional boundary.



2008 Impaired Waters

Categories 4 and 5 by DCR Watershed*

James River Basin

Fact Sheet prepared for DCR Watershed: H01*

Cause Group Code: H01R-01-BAC Reed Creek

Location: The upper limit is the headwaters in the Jefferson National Forest on the Sedalia Quad (intersection of State Routes 638 and 764). The impairment ends at the mouth of Reed Creek on the James River below Big Island, Virginia (Snowden, Sedalia and Big Island Quads).

City / County: Bedford Co.

Use(s): Recreation

Cause(s) /

VA Category: Escherichia coli/ 4A

The Reed Creek Bacteria TMDL Load Duration Study received US EPA approval on 6/21/2004 [Fed. ID. 7763 / 21565] and SWCB approval on 12/02/2004 for these 1998 303(d) Listed waters (formerly 2002 thru 2006 VAW-H01R-01). Three stations are located within the 8.37 mile impaired waters (NHD mileage correction from 2002 Listing 12.27 miles). 2-RED000.16 (Off Route 501), the original listing station, and two additional stations 2-RED005.36 (Route 637 Bridge) and 2-RED008.32 (Route 122 Bridge). Escherichia coli (E.coli) replaces fecal coliform bacteria as the indicator with sufficient E.coli data as per Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters].

2-RED008.22- (Rt. 122 Bridge) Five of 17 E.coli samples exceed the 235 cfu/100 ml WQS instantaneous criterion. Values in excess of the criterion range from 350 to 1300 cfu/100 ml.

2-RED005.36- (Rt. 637 Bridge) E.coli exceedences of the instantaneous criterion are found in 12 of 17 samples where exceeding values range from 280 to 2000 cfu/100 ml.

2-RED000.16- (Off Rt. 501) Eight of 38 E.coli samples exceed the 235 cfu/100 ml WQS instantaneous criterion. Values in excess of the criterion range from 250 to 500 cfu/100 ml. Three of five GM calculations exceed the WQS 126 cfu/100 ml criterion.

Assessment Unit /	Water Name /	Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-H01R_RED01A00 /	Reed Creek Lower /	Reed Creek	4A Escherichia coli	2004	2004	8.37
mainstem from its mouth on the James River upstream to the intersection of State Routes 638 and 764.						

Reed Creek

DCR Watershed: H01*

Estuary (Sq. Miles) Reservoir (Acres) River (Miles)

Escherichia coli - Total Impaired Size by Water Type: **8.37**

Sources:

Livestock (Grazing or Feeding Operations)

On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)

Unspecified Domestic Waste

Wastes from Pets

Wildlife Other than Waterfowl

*Header Information: Location, City/County, Cause/VA Category and Narratives; describe the entire extent of the Impairment. Sizes presented are for Assessment Units (AUs) lying within the DCR Watershed boundary noted above.

[Advanced Search](#)Virginia DEQ Home > [Water Quality Assessment Home](#) > [2006 305\(b\)/303\(d\) Integrated Report](#) > [2006 Assessment Database Information](#)email: [Darryl Glover](#)**2006 Assessment Information:**[Assessment Unit Description](#) | [Use Support Assessment](#) | [TMDL Information](#) | [Monitoring Station Information](#)**Assessment Unit Description:** *(What's this?)***Waterbody Name:** James River Upper PWS**Waterbody Type and Size:** RIVER - 0.72 MILES**Waterbody Location:** The James River from the upstream ending of the WQS PWS designation (37°30'08.38"/79°01'18.18") downstream to the mouth of Wilderness Creek.**Assessment Unit:** VAW-H01R_JMS01A04**Assessment Category:** Va. Category 5A: A Water Quality Standard is not attained. The water is impaired or threatened for one or more designated uses by a pollutant(s) and requires a TMDL (303d list).**Impairments:** PCB in Fish Tissue**Sources:** Source Unknown**Comments:** WQS Class III Sec. 1.1h PWS Assessment basis: DEQ station 2-JMS275.75 (AQ). The segment was 303(d) Delisted in 2002 for the 1998 303(d) FC bacteria listing former State ID VAW-H01R-01. Initial 303(d) listed in 1996 for fecal coliform bacteria. VDH Fish Consumption Advisory issued 12/13/2004. VAC-H03R-04. No VDH Drinking Water Advisory.

Stream Flow Conditions [9 VAC 25-260-50 Numerical criteria for dissolved oxygen, pH and maximum temperature***]. Total field measurements 52 at 2-JMS275.75. Daily Mean Flow; 0202550 James River - Holcombs Rock <7Q10 of 554 cfs on 8/29/02 (440 cfs). One Fully Supporting field measurement set excluded from the dataset. 2-JMS275.75- Five FC observations exceed the 400 cfu/100 ml WQS criterion from 50 samples (Full Support). FC excursions range from 700 to 4500 n/100 ml. No excursions of the Escherichia coli (E.coli) instantaneous criterion are found from nine samples. Nine of 48 TP observations exceed the 0.20 mg/l TP SV - 'Observed Effect'. TP excursions range from 0.21 to 0.30 mg/l. Full Support found for AQ 2000 sediment results, DO, Temp, pH, chlorophyll a, and NH3-N.

STORET station 2-POL000.04

Water body parameters

<u>date</u>	unsorted	sorted	hardness		<u>date</u>	hardness
	<u>pH</u>	<u>pH</u>	<u>date</u>	<u>(mg/l)</u>		<u>(mg/l)</u>
6/7/2001	5.51	5.49	3/20/2003	20.6	10/15/1997	135
4/3/2001	5.49	5.51	1/7/2003	11.733333		102
2/21/2001	5.54	5.54	11/21/2002	10.7		7.8
12/18/2000	5.61	5.61	9/10/2002	168		11
10/24/2000	6.13	5.64	7/10/2002	152		16
8/17/2000	6.14	5.68	5/14/2002	13.2		121
6/1/2000	5.68	5.78	3/13/2002	11.8		8
3/20/2000	5.79	5.79	1/23/2002	14.3		10
2/7/2000	5.78	6.13	11/7/2001	128		134
11/29/1999	5.64	6.14	9/19/2001	145		112
9/27/1999	6.3	6.3	7/18/2001	85.2		14
7/27/1999	7.88	6.32	6/7/2001	11.1		12
4/13/1999	6.87	6.44	2/21/2001	16.9	10/25/1994	15
1/25/1999	6.44	6.87	12/18/2000	14.4		13
10/21/1998	8.02	7.22	10/24/2000	109		12
7/13/1998	7.85	7.85	8/17/2000	106		20
4/21/1998	6.32	7.88	6/1/2000	8		22
1/6/1998	7.22	7.99	3/20/2000	7		22
10/15/1997	7.99	8.02 <90th %tile		11.5		12
7/16/1997	8.08	8.03		7		12
7/18/1989	8.03	8.08		51		16
				111		30
				30		90
				30		30
				124		12
				134		15
				23.5		12
				14.5		16
						80
						24
						10
						56
						26.16
				avg. hardness ->		

unsorted data - April 2002 through March 2003												
	pH	Temp				pH	Temp			pH	Temp	
Apr-02	6.9	4	Jul-02	7.7	25.8	Oct-02	7.7	22.4	Jan-03	6.9	5.7	
	6.7	13.5		7.8	25.9		8.1	9.1		7	8.6	
	7.3	15		7	25.3		7.7	23.1		7.4	5.1	
	7.1	14.5		7.9	25.9		8	23.6		8	10.8	
	7	14		8	26.4		8.2	23.3		7	8.3	
	7.2	14.7		7.9	26.3		7.9	7		7.7	4.3	
	8	12.7		7.1	5.6		8	10.4		7.7	6	
	8.4	14.3		7.1	8.3		8.1	21.4		7	3.6	
	6.8	15.6		7.7	26.4		8	20.3		6.6	8.2	
	7.2	16.1		7.8	26.1		8.2	20.1		8.5	5	
	7.4	16.3		7.5	24.9		8.1	9		9.3	10.1	
	7.2	4.7		7	24		8.3	20.7		9.4	4.1	
	6.8	15.7		6.9	24.3		8	20.1		9.5	7.8	
	7.1	5.2		7.6	5.8		7.8	20.7		9.2	9.1	
	6.7	19.7		6.6	8		7.9	7.1		8.8	6	
	6.9	20.5		7.6	24.1		8.4	20.9		7.8	7.5	
	7.1	5.6		7.4	24.9		8	17.9		7.5	8.3	
	7.2	21		7.5	25.3		8.2	17.5		7.2	8.9	
	6.4	20.6		7.6	25.1		8.1	18.3		6.7	7.8	
	6.9	5.6		7.5	25.2		8	12.7		Feb-03	7.1	9
	6.7	5.3		8.5	10.7		7.8	7.3			7.2	7.5
	7.1	17.8		9	26.2		7.5	9.8			7.2	6.7
	7	18.6		8.4	26.1		7.6	15.3			7.3	7.7
	7.4	8.9		7.6	25.2		6.9	16.9			7.2	10.3
	7.4	17.8		7.1	25		6.5	16.2			8.5	5.7
	7.5	17.2		8.9	23.9		6.8	15.7			8.8	5.6
	7.3	17.8		7	7.4		6.5	12.2			8.9	5.1
	7.4	5.1		7.4	24.5		6.9	13.8			8.9	6.5
May-02	7.1	5.2	7.8	26.4	7	7.7	8.1	7.7				
	7.5	18.4	7.5	25.5	6.5	13	7.6	10.8				
	7.2	17.4	6.8	25.6	6.4	13.4	8.9	8.1				
	7.1	17.4	Aug-02	7.5	26.5	7.4	13	7.8	5.7			
	7.8	18.4		7.4	26	7.3	12.3	7.1	6.8			
	7.4	18.9		7.8	9.3	6.7	15.4	6.8	3.6			
	7.3	7.3		7.5	25.6	7	15.2	6.8	8			
	6.8	6.5		7.4	27.4	6.5	13.5	6.9	8.1			
	7.3	8.4		7.8	27	6.7	13.4	8.8	8.2			
	7.4	21.4		7.5	25.7	7.2	12.4	7.3	10			
	7.6	6.5		7	25.2	7.1	11.8	8.6	6.5			
	7.6	6		6.6	24.5	7	11.3	8.5	5.6			
	7.5	11		7	24.8	6.9	8.7	Mar-03	8.2	9.1		
	7.9	9.4		7.6	25	6.8	9.8		8	9.3		
	7.4	10		7.5	4	6.8	12.9		7	9.3		
	7.2	18		7	26.9	6.8	11.5		7.3	9.4		
	7.5	6.9		6.5	27.1	6.7	11.2		7.1	11.7		
	7.6	17.3		6.8	27.4	6.7	12.5		7.3	12.5		
	7.8	17.1		7.4	9.3	7	6.7		8.5	9		
	8	5.2		7	26.1	Dec-02	7.1		8.4	8.5	9.8	
	7.7	18.7		7.6	4.7		7.3		7.4	8.9	13.9	
	7.5	19.2		7.3	26.7		7.2		6.8	8.9	11.7	
	7.2	20		7.2	7.6		6.8		7.8	6.7	10	
	7.1	20.8		6.8	7		7		9.2	7.5	14.1	
	7.2	5.9		7.3	27.6		6.8	10.3	7.6	7.1		
	7.5	3.3		7.5	3.5		6.5	7.6	7.4	13.8		
	6.3	5.4		7.7	4.6		6.9	6.5	7.6	10.6		
	Jun-02	7.3		23	6.8		26.9	7.3	7.7	7.2	3	
7.5		22.7		7.2	26.3		7.1	7.8	7.6	8		
7.6		23.1		7	26.1		7.1	8.5	7.4	15.3		
7.2		23.5		6.8	3.9		7.9	6.7	7.4	13.3		
7.3		23.8	Sep-02	8.2	4.4	7.2	8.7	8.9	14.7			
7.2		25		7.2	24	7.1	9.1	8.7	14			
7.5		24.1		7.4	24.3	7.4	8.8	8	15			
7.5		23		7.5	4.8	7.3	9.1	6.5	5.3			
7.4		7		7.2	5.1	7.3	3.6	7.2	17.3			
7.5		5.1		7.4	5			6.8	7.4			
7.4		24.2		7.6	24.4			7	16			
7.5		25.8		7.5	23.5			7.3	6.9			
7.9		8.3		7.4	24.1			7.1	13.2			
7.8		3.5		7.3	21.5							
7.1		5.7		7.9	25							
7.5		10.4		7.6	24.2							
7.5		10.4	7.7	24.5								
7.5		5.8	7.9	5.5								
7.2		25.2	7.8	7.3								
7.1		6.9	7.7	23.1								
7.6		25.6	7.7	20.7								
7.3		25.6	7.7	22.1								
7.7		25.3	7.6	22.4								
7.1		24.2	7.2	6.1								
7.1		8.3	7.4	8								
7.6		4.9										

sorted data - April 2002 through March 2003								Ammonia	
pH	Temp	pH	Temp	pH	Temp	pH	Temp	(mg/l)	
6.3	3	7.1	7.6	7.4	12.7	7.8	23.1	Apr-02	0.1
6.4	3.3	7.1	7.7	7.4	12.9	7.8	23.1	May-02	ND
6.4	3.5	7.1	7.7	7.4	13	7.8	23.1	Jun-02	ND
6.5	3.5	7.1	7.7	7.4	13	7.8	23.3	Jul-03	0.1
6.5	3.6	7.1	7.7	7.4	13.2	7.8	23.5	Aug-03	1.9
6.5	3.6	7.1	7.8	7.4	13.3	7.8	23.5	Sep-03	ND
6.5	3.6	7.1	7.8	7.4	13.4	7.8	23.6	Oct-03	ND
6.5	3.9	7.1	7.8	7.4	13.4	7.8	23.8	Nov-03	0.2
6.5	4	7.1	7.8	7.4	13.5	7.8	23.9	Dec-03	17
6.5	4	7.1	8	7.4	13.5	7.8	24	Jan-03	0.1
6.6	4.1	7.1	8	7.4	13.8	7.9	24	Feb-03	0.2
6.6	4.3	7.1	8	7.5	13.8	7.9	24.1	Mar-03	0.8
6.6	4.4	7.1	8	7.5	13.9	7.9	24.1		
6.7	4.6	7.1	8.1	7.5	14	7.9	24.1		
6.7	4.7	7.1	8.1	7.5	14	7.9	24.2		
6.7	4.7	7.1	8.2	7.5	14.1	7.9	24.2		
6.7	4.8	7.1	8.2	7.5	14.3	7.9	24.2		
6.7	4.9	7.2	8.3	7.5	14.5	7.9	24.3		
6.7	5	7.2	8.3	7.5	14.7	7.9	24.3		
6.7	5	7.2	8.3	7.5	14.7	8	24.4		
6.7	5.1	7.2	8.3	7.5	15	8	24.5		
6.7	5.1	7.2	8.3	7.5	15	8	24.5		
6.8	5.1	7.2	8.4	7.5	15.2	8	24.5		
6.8	5.1	7.2	8.4	7.5	15.3	8	24.8		
6.8	5.1	7.2	8.5	7.5	15.3	8	24.9		
6.8	5.2	7.2	8.6	7.5	15.4	8	24.9		
6.8	5.2	7.2	8.7	7.5	15.6	8	25		
6.8	5.2	7.2	8.7	7.5	15.7	8	25		
6.8	5.3	7.2	8.8	7.5	15.7	8	25		
6.8	5.3	7.2	8.9	7.5	16	8	25		
6.8	5.4	7.2	8.9	7.5	16.1	8	25.1		
6.8	5.5	7.2	9	7.5	16.2	8.1	25.2		
6.8	5.6	7.2	9	7.5	16.3	8.1	25.2		
6.8	5.6	7.2	9	7.5	16.9	8.1	25.2		
6.8	5.6	7.2	9.1	7.5	17.1	8.1	25.2		
6.8	5.6	7.2	9.1	7.5	17.2	8.1	25.3		
6.8	5.6	7.2	9.1	7.5	17.3	8.2	25.3		
6.8	5.7	7.2	9.1	7.5	17.3	8.2	25.3		
6.8	5.7	7.2	9.1	7.5	17.4	8.2	25.5	< 90th %tile values	
6.9	5.7	7.2	9.2	7.6	17.4	8.2	25.6		
6.9	5.7	7.2	9.3	7.6	17.5	8.2	25.6		
6.9	5.8	7.2	9.3	7.6	17.8	8.3	25.6		
6.9	5.8	7.3	9.3	7.6	17.8	8.4	25.6		
6.9	5.9	7.3	9.3	7.6	17.8	8.4	25.7		
6.9	6	7.3	9.4	7.6	17.9	8.4	25.8		
6.9	6	7.3	9.4	7.6	18	8.5	25.8		
6.9	6	7.3	9.8	7.6	18.3	8.5	25.9		
6.9	6.1	7.3	9.8	7.6	18.4	8.5	25.9		
6.9	6.5	7.3	9.8	7.6	18.4	8.5	26		
7	6.5	7.3	10	7.6	18.6	8.5	26.1		
7	6.5	7.3	10	7.6	18.7	8.5	26.1		
7	6.5	7.3	10	7.6	18.9	8.6	26.1		
7	6.5	7.3	10.1	7.6	19.2	8.6	26.1		
7	6.7	7.3	10.3	7.6	19.7	8.7	26.2		
7	6.7	7.3	10.3	7.6	20	8.8	26.3		
7	6.7	7.3	10.4	7.6	20.1	8.8	26.3		
7	6.8	7.3	10.4	7.6	20.1	8.9	26.4		
7	6.8	7.3	10.4	7.6	20.3	8.9	26.4		
7	6.9	7.3	10.6	7.6	20.5	8.9	26.4		
7	6.9	7.3	10.7	7.7	20.6	8.9	26.5		
7	6.9	7.3	10.8	7.7	20.7	8.9	26.7		
7	7	7.3	10.8	7.7	20.7	8.9	26.9		
7	7	7.4	11	7.7	20.7	8.9	26.9		
7	7	7.4	11.2	7.7	20.8	9	27		
7	7.1	7.4	11.3	7.7	20.9	9.2	27.1		
7	7.1	7.4	11.5	7.7	21	9.3	27.4		
7	7.3	7.4	11.7	7.7	21.4	9.4	27.4		
7	7.3	7.4	11.7	7.7	21.4	9.5	27.6		
7	7.3	7.4	11.8	7.7	21.5				
7.1	7.4	7.4	12.2	7.7	22.1				
7.1	7.4	7.4	12.3	7.7	22.4				
7.1	7.4	7.4	12.4	7.7	22.4				
7.1	7.5	7.4	12.5	7.8	22.7				
7.1	7.5	7.4	12.5	7.8	23				
7.1	7.6	7.4	12.7	7.8	23				

DMR Data Summary

VPDES Permit VA0027553

Eagle Eyrie Conference Center STP

Due Date	Flow (MGD)		pH (s.u.)		BOD5		TSS		TKN		DO		E. coli Conc
	Qty	Max	Min	Max	Qty	Max	Qty	Max	Conc	Max	Min	Max	
10-Feb-2005	0.0088	0.0255	6.6	8.9	0.07	0.07	0.25	0.25	7	7	6.9	3.34	3.8
10-Mar-2005	0.0123	0.0124	6.6	8	<QL	<QL	0.07	0.07	4	2	7.9	2	8
10-Apr-2005	0.0131	0.0383	6.6	8.7	0	0	0.98	0.98	24	2	7	2	7.1
10-May-2005	0.013	0.042	6.5	8.7	0.18	0.18	0.71	0.71	19	1	6.7	1	3
10-Jun-2005	0.0106	0.0409	6.7	7.9	0	0	0.31	0.31	17	3	6.3	3	3
10-Jul-2005	0.0164	0.0397	6.6	7.9	0	0	0.3	0.3	5	1	6.5	1	3
10-Aug-2005	0.0202	0.0414	7	7.9	0.16	0.16	0.24	0.24	3	1.6	6.4	1.6	2
10-Sep-2005	0.0218	0.0431	6.9	8.3	0.12	0.12	0.18	0.18	3	<QL	6.3	<QL	2
10-Oct-2005	0.0093	0.0208	6.3	7.8	0.05	0.05	0.2	0.2	12	<QL	6.5	<QL	2
10-Nov-2005	0.0145	0.055	6.5	8.7	0.2	0.2	0.26	0.26	9	2.1	6.7	2.1	2.4
10-Dec-2005	0.0101	0.0304	6.2	8.4	0.07	0.07	0.21	0.21	6	1.8	6.7	1.8	7.5
10-Jan-2006	0.0081	0.0237	6.6	8.8	0.24	0.24	1.8	1.8	59	3.2	8.1	3.2	191
10-Feb-2006	0.0077	0.0252	6.9	8.9	0.04	0.04	0.19	0.19	9	1	7.7	1	2
10-Mar-2006	0.0082	0.0179	7.5	8.9	0.03	0.03	0.09	0.09	5	0.52	7.9	0.52	2
10-Apr-2006	0.01	0.0341	7.5	8.7	0.03	0.03	0.33	0.33	19	1.1	6	1.1	3.7
10-May-2006	0.0091	0.0275	7.5	8.4	0.04	0.04	0.45	0.45	24	1.2	7.1	1.2	2
10-Jun-2006	0.0122	0.119	7.3	8.3	0.2	0.2	0.87	0.87	24	0.7	6.3	0.7	2.7
10-Jul-2006	0.0136	0.0538	7	8	0.1	0.1	0.9	0.9	17	0.74	6.3	0.74	2
10-Aug-2006	0.014	0.0272	7	7.9	0.38	0.38	0.86	0.86	9	1.6	6.2	1.6	31
10-Sep-2006	0.0097	0.0272	7.1	8.2	0.1	0.1	0.3	0.3	6	1.4	6.2	1.4	2
10-Oct-2006	0.008	0.0366	7.1	8.2	0.06	0.06	0.24	0.24	13	1.2	6.5	1.2	2
10-Nov-2006	0.0117	0.0363	7.3	8.8	0.3	0.3	0.9	0.9	18	1.1	6.4	1.1	3.4
10-Dec-2006	0.009	0.025	7.6	8.9	0.17	0.17	1.9	1.9	34	0.5	7.3	0.5	5.6
10-Jan-2007	0.0046	0.0208	7.2	9.6	0.1	0.1	0.32	0.32	22	1.6	7.6	1.6	12.2
10-Feb-2007	0.0057	0.0357	7.4	9	0.22	0.22	1.3	1.3	58	0.5	7.8	0.5	9.7
10-Mar-2007	0.0054	0.0174	6.3	9	0.1	0.1	0.15	0.15	7	1.5	6.2	1.5	69
10-Apr-2007	0.0076	0.0374	6.9	8.9	0.1	0.1	2.5	2.5	32	1.76	6.1	1.76	4.8
10-May-2007	0.0042	0.0243	6.8	9.6	0.03	0.03	0.13	0.13	8	0.83	6.2	0.83	20.5
10-Jun-2007	0.0052	0.02	7.3	7.9	0.07	0.07	0.16	0.16	14	1.85	6.5	1.85	10.7
10-Jul-2007	0.0042	0.0134	7.3	8.4	0.05	0.05	0.18	0.18	11	0.71	6.2	0.71	5.3
10-Aug-2007	0.0113	0.0276	7.1	8.1	0.4	0.4	0.67	0.67	10	0.98	6.2	0.98	2.8
10-Sep-2007	0.0074	0.0273	7.4	8.3	0.08	0.08	0.43	0.43	11	<QL	5.9	<QL	2
10-Oct-2007	0.0032	0.0093	7.3	8.5	0.03	0.03	0.38	0.38	22	17.1	6.2	17.1	2
10-Nov-2007	0.0076	0.0312	7.4	8.2	0.03	0.03	0.36	0.36	23	1.2	6.6	1.2	2
10-Dec-2007	0.0063	0.0264	6.9	8.2	0.06	0.06	0.2	0.2	13	1.4	7.5	1.4	24
10-Jan-2008	0.0047	0.0282	7.1	8.5	0.21	0.21	0.08	0.08	23	1.2	5.6	1.2	2
10-Feb-2008	0.0032	0.0163	6.8	8.8	1.1	1.1	0.18	0.18	9	3	8.3	3	3.7
Permit limits	0.0395	NL	6.0	9.0	2.6	4.0	4.4	6.7	30	6.0	6.0	9.0	126


M E M O R A N D U M
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
WEST CENTRAL REGIONAL OFFICE
WATER DIVISION

3019 Peters Creek Road

Roanoke, Virginia 24019-2738

SUBJECT: Site visit for VPDES Permit Reissuance - VA0027553
Eagle Eyrie Baptist Conference Center STP, Bedford County

To: VPDES Permit file VA0027553

From: Susan K. Edwards, Environmental Engineer Sr. 

Date: June 6, 2003

Copies: Samuel C. Hale, Compliance Supervisor

On Monday, May 19, 2003, the writer performed a site visit at the Eagle Eyrie Baptist Conference Center STP. Also present during the visit was John Thomas who is an operator for the Eagle Eyrie Baptist Conference Center STP. The system is a 39,500 gallon-per-day biological treatment system. The treatment facility consists of a mechanical & bar screen for primary treatment, equalization tank, influent pump station, twin Fluidyne SBR tanks, a decant tank, pumped to a sand filter, ultraviolet light disinfection, flow monitoring and sampling station, cascade post aeration and an outfall structure. The treatment works also includes an aerated sludge holding tank and covered sludge drying beds. The Conference Center currently serves an extremely variable population of approximately 1000 quests and staff members with use peaking with summer operation. The STP is a new sequencing batch reactor (SBR) plant installed since the last permit reissuance.

It was noted that the Imhoff tank was full of standing water. This open top concrete tank is part of the old treatment system that I believe was retained as a backup for overflow management if needed. This tank should be drained and kept empty if it is to be used for that purpose or filled so that water does not stagnate.

The operator said they are having problems with the treatment system operating quite right. They have been doing trouble-shooting on portions of the plant and the control system but have not seemed to resolve matters. I am not certain that I have properly itemized the locations the operator noted as of concern. I believe he noted problems with operation of lead and lag floats in the equalization basin and the sludge digester tank. The operator noted problems with the screen and effluent pumps between the decant tank/basin and the sand filters. With all the rainfall over the last few months it might be that the problems with the cycling of the treatment system have been related to high inflow & infiltration associated with ground saturation. The operator noted that they have had problems maintaining the mixed liquor suspended solids. This is most likely attributed to overflows of the #2 SBR tank that were evident at the base of that tank. The UV disinfection house was observed to have a small amount of water on the floor, but it is believed that this is groundwater infiltration into the building that is below grade. The cascade aeration steps produce an even spread of flow across each step as the treated flow makes it's way to the discharge pipe. Effluent samples and flow are taken by the auto-sampler at the head of the aeration steps rather than at the end of the discharge pipe at the receiving stream. Measures of DO and pH are measured at the toe of the steps. The discharge is through a steep pipe across the filled site area to the unnamed tributary to the James River. The "receiving stream" is a well-defined channel (rocky mountainside stream) and there was substantial flow evident without the contribution of the discharge. However, there have been numerous rain events in the past weeks and the ground is quite saturated. The effluent had no unusual appearance at the outlet. There was no build-up of biological sludge observed downstream of the discharge. There were no chemicals observed stored outside of a building. The Operations and Maintenance manual for the facility is not maintained at the plant but to date a revised Manual has not been resubmitted for review and approval.

The facility appeared in good condition however the following areas are in need attention:

- Plant operations are in need of further troubleshooting. The operator is aware of this and it is assumed that the owner is as well. Treatment unit overflows are not acceptable. An investigation into the magnitude of I&I problems might help in operation.
- The O&M Manual for the facility must be resubmitted for approval by VDH. A complete accurate O&M Manual must be maintained.

**VPDES Permit VA0027553
Eagle Eyrie STP STP
Reissuance July 2008**

ATTACHMENT B

1. Output from Agency Mixing Zone Analysis version 2.0.4 software from 2003 evaluation.
2. Regional DO Model Version 3.2 used for 1993 permit reissuance - BPJ limits for BOD, DO & TKN.
3. AWLA spreadsheet for establishing antidegradation baselines.
4. WLA spreadsheet for ammonia limit evaluation.
5. Agency STATS software output for analysis of ammonia.

Mixing Zone Predictions for Eagle Eyrie Conf. Cntr STP

Effluent Flow = 0.0395 MGD
Stream 7Q10 = 0.00517 MGD
Stream 1Q10 = 0.0045 MGD
Stream slope = .02 ft/ft
Stream width = 2 ft
Bottom scale = 5
Channel scale = 3

Mixing Zone Predictions @ 7Q10

Depth = .1223 ft
Length = 6.59 ft
Velocity = .2827ft/sec
Residence Time = .0003days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .121 ft
Length = 6.66 ft
Velocity = .2812ft/sec
Residence Time = .0066 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

WLA Analysis For: Eagle Eye Conf.Center STP

ANTIDEGRADATION

Date: 6/3/2003

Stream: UT James River									
Effluent Information									
Mean Hardness =	46	mg/L	Mean Hardness =	46	mg/L	Hardness:	46.00 acute	Mix Hardness=	46.00 acute
Stream NH3 =	0	mg/L	Effluent NH3 =	0	mg/L	7Q10 Ratio:	46.00 chronic		46.00 chronic
90% Temperature =	25.5	C	90% Temperature =	25.5	C	1Q10 Ratio:	1.13	* WLAa	0.96000
90% pH =	8.02	SU	90% pH =	8.2	SU		1.11	Coefficient =	0.98724
Fractional 7Q10 =	0.0052	100% of 7Q10 MGD	Original Flow =	0.0395	MGD	Hamonic ratio:	2.111392	Acute IWC =	0.88426
Fractional 1Q10 =	0.0045	100% of 1Q10 MGD	Upgrade Flow =	0.0395	MGD	30Q5 ratio:	1.3	Chronic IWC =	
Harmonic mean =	0.0439	Carcinogen							
30Q5 Flow =	0.0110	Non-carcinogen							
Annual Average =	1	Dioxin only							
R(water)(Lake) or S(torm):	R	R, L, S							
Trout Present?	N	Y, N							
Public Water Supply:	Y	Y, N							
Parameter and Form	Receiving Stream Concentration	Expected Effluent Concentration	Carcinogen?	Sort? (Y/N)	Aquatic Protection Freshwater Criteria	Human Health	Human Health	Human Health	Human Health
					Acute Quality Criteria at 1Q10	Existing Chronic Criteria at 7Q10	PWS Quality Criteria	Chronic Baseline	Acute A.W.L.A
1,1-dichloroethylene			n		None	NA	310	NA	NA
1,2,4-trichlorobenzene			n		None	NA	260	NA	NA
1,2-dichlorobenzene			n		None	NA	2700	NA	NA
1,2-dichloroethane			C		None	NA	3.8	NA	NA
1,3-dichlorobenzene			n		None	NA	400	NA	NA
1,4-dichlorobenzene			C		None	NA	400	NA	NA
2,4,6-Trichlorophenol			n		None	NA	21	NA	NA
2,4-dichlorophenol			n		None	NA	93	NA	NA
2,4-dichlorophenoxy acetic acid			n		None	NA	71	NA	NA
2,4-dinitrophenol			C		None	NA	540	NA	NA
2,4-dinitrotoluene			n		None	NA	1.1	NA	NA
2-Chlorophenol			n		None	NA	120	NA	NA
Acecarprithins			n		None	NA	1200	NA	NA
Aldrin			C		3	0	0.0013	0	0.0013
Ammonia (mg/l as N)			n		3,836	0	0.879	0	0.879
Anthracene			n		None	NA	9600	NA	NA
Antimony			n		None	NA	14	NA	NA
Arsenic			n		None	NA	50	NA	NA
Arsenic-3			n		360	0	None	NA	100.31
Barium			n		None	NA	2000	NA	NA
Benzene			C		530	0	12	13.3	14.98
Benz(a)anthracene			C		None	NA	0.044	NA	NA
Benz(a)pyrene			C		None	NA	0.044	NA	NA
Benz(b)fluoranthene			C		None	NA	0.044	NA	NA
Benz(k)fluoranthene			C		None	NA	0.044	NA	NA
Bromodolom			C		None	NA	44	NA	NA
Butyl benzyl phthalate			n		None	NA	3000	NA	NA
Cadmium			n		1.63	0	None	NA	0.46
Carbon Tetrachloride			C		None	NA	2.5	NA	NA
Chlordane			C		2.4	0	0.0058	0	0.0011
Chloride			n		860000	0	250000	0	215,000
Chlorine			n		19	0	None	NA	4,750
Chlorodibromomethane			n		None	NA	890	NA	NA
Chloroform			C		None	NA	57	NA	NA
Chlorpyrifos			n		0.083	0	None	NA	0.021
Chrysene			C		None	NA	0.044	NA	NA
Copper			n		8.53	0	1300	0	2,132
Cr-III			n		919.34	0	None	NA	228.8
Cr-hex			n		16	0	None	NA	4.0
Cyathide			n		22	0	700	0	5.5
DDD			C		None	NA	0.0083	NA	NA
DDT			C		None	NA	0.0058	0	NA
DDT			C		1.1	0	0.0059	0	0.275
DDT			n		None	NA	0.1	NA	NA
DDT			C		None	NA	18	0	NA
Di-2-ethylhexyl Phthalate			n		None	NA	1.8	NA	NA

Human Health A.WLA

Chronic A.WLA

Acute A.WLA

Human Health Baseline

Chronic Baseline

Acute Baseline

Human Health Quality

Existing Quality

Chronic Quality

Existing Quality

Chronic Quality

Existing Quality

Chronic Quality

Existing Quality

Chronic Quality

Existing Quality

Chronic Quality

Existing Quality

Dibenz(a,h)anthracene	C	n	None	NA	None	NA	0.044	0	NA	NA	0.0044	NA	NA	NA	0.01
Dibutyl phthalate		n	None	NA	None	NA	2700	0	NA	NA	270	NA	NA	NA	345
Dichlorobromomethane	C	n	None	NA	None	NA	5.6	0	NA	NA	0.560	NA	NA	NA	1.2
Dichloromethane	C	n	None	NA	None	NA	47	0	NA	NA	4.700	NA	NA	NA	9.92
Dechlorin		n	2.5	0	0.0019	0	0.00014	0	0.025	0.0005	0.00001	0.70	0.00	0.0000	0.0000
Diethyl phthalate		n	None	NA	None	NA	23000	0	NA	NA	2300	NA	NA	NA	2940
Dioxin		n	None	NA	None	NA	0.0000012	0	NA	NA	0.000	NA	NA	NA	0.00000316
Dissolved Oxygen		n	4	0	5	0	None	NA	1.000	1.2500	NA	1.11	1.41	NA	NA
Endosulfen		n	0.22	0	0.056	0	110	0	0.005	0.0140	11.0	0.05	0.02	14.06	NA
Endrin		n	0.18	0	0.0023	0	0.76	0	0.045	0.0006	0.076	0.05	0.00	0.10	NA
Ethylbenzene		n	3200	0	320	0	3100	0	890	80	310	892	90	396	NA
Fluoranthene		n	None	NA	None	NA	300	0	NA	NA	30	NA	NA	NA	38
Fluorene		n	None	NA	None	NA	1300	0	NA	NA	130	NA	NA	NA	168
Foaming Agents (MBAS)		n	None	NA	None	NA	500	0	NA	NA	50	NA	NA	NA	64
Guftalon		n	None	NA	0.01	0	None	NA	0.130	0.0010	0.0002	0.14	0.00	0.00	NA
Heptachlor	C	n	0.52	0	0.0038	0	0.0021	0	NA	0.5	NA	NA	NA	0.57	NA
Hydrogen Sulfide		n	None	NA	2	0	None	NA	NA	0.044	0	NA	NA	0.01	NA
Indeno(1,2,3-cd)pyrene	C	n	None	NA	None	NA	300	0	NA	NA	30.0	NA	NA	NA	38.34
Iron		n	None	NA	None	NA	6900	0	NA	NA	690	NA	NA	NA	862
Isochlorine		n	None	NA	None	NA	None	0	NA	NA	NA	NA	NA	NA	NA
Kepone		n	44.25	0	5.03	0	15	0	11.083	1.2568	1.500	12.33	1.42	1.92	NA
Lead		n	2	0	0.08	0	7	0	0.5	0.02	0.70	0.56	0.02	0.89	NA
Lindane		n	None	NA	0.1	0	None	NA	NA	0.0250	NA	NA	0.03	NA	NA
Malathion		n	None	NA	None	NA	50	0	NA	NA	5.0	NA	NA	NA	6.39
Manganese		n	2.4	0	0.012	0	0.052	0	0.6	0.0030	0.005	0.67	0.00	0.01	NA
Mercury		n	None	NA	0.03	0	40	0	NA	0.0075	4.0	NA	0.01	5	NA
Methoxychlor		n	None	NA	None	NA	None	0	NA	NA	NA	NA	NA	NA	NA
Mirex		n	None	NA	None	NA	690	0	NA	NA	68	NA	NA	NA	87
Monochlorobenzene		n	620	0	62	0	None	NA	15.0	15.5	NA	172.75	17.53	NA	NA
Naphthalene		n	94.73	0	10.34	0	810	0	23.682	2.6346	81	26.39	2.98	78	NA
Nickel		n	None	NA	None	NA	10000	0	NA	NA	1000	NA	NA	NA	1278
Nitrate(as N)		n	None	NA	None	NA	17	0	NA	NA	1.700	NA	NA	NA	2.17
Nitrobenzene		n	0.065	0	0.013	0	None	NA	0.016	0.0033	NA	0.02	0.00	NA	NA
Parathion	C	n	None	NA	None	NA	0.00044	0	NA	NA	0.000	NA	NA	NA	0.00
PCBs(7 species)		n	0.06	0	0.04	0	0.28	0	0.016	0.0102	0.028	0.02	0.01	0.04	NA
Pentachlorophenol		n	None	NA	None	NA	21000	0	NA	NA	2100	NA	NA	NA	2684
pH		n	None	NA	None	NA	None	NA	NA	NA	NA	NA	NA	NA	NA
Phenol		n	None	NA	None	NA	None	NA	NA	NA	NA	NA	NA	NA	NA
Phosphorus(elemental)		n	None	NA	None	NA	None	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene		n	None	NA	None	NA	960	0	NA	NA	96.000	NA	NA	NA	123
Radioactivity		n	None	NA	None	NA	None	NA	NA	NA	NA	NA	NA	NA	NA
Selenium		n	20	0	5	0	170	0	5.0	1.3	17.0	5.57	1.41	22	NA
Silver		n	1.07	0	None	0	None	0	0.267	NA	0.000	0.30	NA	NA	NA
Silvex		n	None	NA	None	NA	50	0	NA	NA	5.000	NA	NA	NA	6
Sulfate		n	None	NA	None	NA	250000	0	NA	NA	25000	NA	NA	NA	31854
Temperature		n	32	0	32	0	None	NA	8.0	8.0	NA	9	9	NA	NA
Tetrachloroethylene		n	None	NA	None	NA	320	0	NA	NA	32	NA	NA	NA	41
Toluene		n	1750	0	175	0	6800	0	437.5	43.75	680	487.91	49.48	869	NA
Total dissolved solids		n	None	NA	None	NA	500000	0	NA	NA	50000	NA	NA	NA	63908
Toxaphene	C	n	0.73	0	0.0002	0	0.0073	0	0.183	0.0001	0.001	0.20	0.00	0.00	NA
Tributyltin		n	0.46	0	0.028	0	None	NA	0.115	0.0085	NA	0.13	0.01	NA	NA
Trichloroethylene	C	n	None	NA	None	NA	27	0	NA	NA	2.700	NA	NA	NA	5.70
Vinyl Chloride		n	None	NA	None	NA	20	0	NA	NA	2.000	NA	NA	NA	3
Xylenes, total		n	740	0	74	0	None	NA	185.0	18.5	NA	206.2	20.9	NA	NA
Zinc		n	60.81	0	54.89	0	5000	0	15.15	13.72	500.0	16.88	15.52	639.08	NA

Footnotes:

1. All concentrations expressed as micrograms per liter (ug/L), except Ammonia.
2. Ammonia (as mg/L) selected from separate tables based on pH and temperature.
3. Acute-1 hour avg. concentration not to be exceeded more than 1/3 years.
4. Chronic-4 day avg concentration not to be exceeded more than 1/3 years.
5. Complete mix-mass balances employ 300G for Non-carcinogens, and Harmonic Mean for Carcinogens
6. All flow values are expressed as Million Gallons per Day.
7. 100% mix assumed based on diffuser.
8. Metals measured as Dissolved, unless specified otherwise.
9. (c)-indicates carcinogenic parameter.
10. Public Water Supply-protects for fish and water consumption.
11. Other Waters-protects for fish consumption only.
12. Hardness expressed as CaCO3 (mg/L).
13. All limitations are based on EPA's TSD Statistical approach.

DATA PREPARATION WORKSHEET

PAGE 1

(This Page is Needed Once for Each Model)

Use this form to assist in the preparation of the model input data. The form is arranged so that the data appears in the order needed by the model. Once the form is complete, you may input the data for a model run by simply entering the numbers and other data that you have put in the right hand column. There is some guidance provided here, but for detailed guidance refer to the manual or call headquarters for assistance.

Some of the input data are character, such as names; some are codes, such as "Y", "N" or "3"; and some are actual numeric data such as "5.6". Be careful to enter the correct item called for. Some of the lines below may be blank depending on choices. Leave them blank and do not input data for blank lines when running the model. Miscellaneous items that are not in the right most column are intermediate guidelines, not input data.

Site Inspection Performed? (Y/N)

Name of Receiving Stream

River Basin

Section

Classification

Are Standards Violated Due to Natural Causes? (Y/N)

Class and Standards Appropriate for the Stream? (Y/N)

Is There a Dam in the Reach to be Modeled? (Y/N)

Is There a Discharge Within 3 Miles of Model Start? (Y/N)

If "Y": Flow of Upstream Discharge (MGD)

BOD5 at Model Start (Mg/l)

TKN at Model Start (Mg/l)

D.O. at Model Start (Mg/l)

Name of Discharge Being Modeled

Proposed Flow (MGD)

Proposed BOD5 (Mg/l)

Proposed TKN (Mg/l)

Proposed D.O. (Mg/l)

Number of Segments to be Modeled

(Determined during your field inspection and based on the physical characteristics of the stream. See "Reason for Defining Segment" on Page 2)

7Q10 Estimation Method Code

(Two methods are provided: 1 = Drainage Area Comparison; 2 = Flow Comparison)

You may compare drainage areas or observed flows at the model site with a gauge).

Name of Gauge Used to Estimate 7Q10

If Method 1: Gauge Drainage Area (Sq.Mi.)

Gauge 7Q10 (MGD)

Drainage Area at Discharge (Sq.Mi.)

If Method 2: Gauge 7Q10 (MGD)

Observed Flow at Gauge (MGD)

Observed Flow at Discharge Point (MGD)

Is the Stream a Dry Ditch? (Y/N)

Does Antidegradation Apply? (Y/N)

Allocation Temperature for the Model (°C)

(Obtain a STORET retrieval for the nearest monitoring station to the discharge. Enter the 98th percentile temperature of the STORET data for the period being modeled.)

Y

X-trib. to James R.
James River (Upper)

11h

III

N

Y

N

N

Eagle Eyrie Baptist Conf. Center

1

None

0.2

0

0.14

Y

N (found in gauge report as early as 1970)

22

(90th percentile of eff. data)

DATA PREPARATION WORKSHEET

PAGE 2

(This Page is Needed for Each Separate Segment Being Modeled)

The first segment starts at the discharge being modeled and segment ends are defined according to the field inspection. Normally a distance of 3 to 5 miles is sufficient for a single discharge model. Dilution by a major tributary is often sufficient to allow the model to be ended. You should, however, inspect sufficient stream length to allow you to increase the number of segments or total model length if the model shows that the critical area is outside your initial estimates. This will allow the addition of segments and the preparation of a new data set without the necessity to reinspect the stream. As a general guideline, the higher the percentage the discharge is of the total stream flow the longer the distance you will have to model. Ten miles should suffice for practically all situations.

Segment Definition Code

Reasons for Defining a Segment:

- 1 = A Tributary Enters at the Segment End
- 2 = A Significant Physical Change Occurs at Segment End
- 3 = Another Discharge Enters at Segment End
- 4 = The Model Ends

Length of Segment (Mi.)

0.56

Based on the stream characteristics you observed, use your judgement and the flow ratio below to estimate the segment's physical characteristics at the 7Q10 flow condition. Note that the model checks to see if cross sectional area times velocity is equal to the flow ($V=QA$). It checks to see if the drainage area increases in the downstream direction and it checks to see if the elevation decreases in the downstream direction. You will run into trouble if the estimates you make below are unreasonable.

(a): Enter Flow Estimated During Inspection (MGD)

(b): Enter 7Q10 at Model Start (Include Discharge) (MGD)

(c): Calculate the Flow Ratio (a/b)

0.0395

Estimated 7Q10 Width (Ft.)

Estimated 7Q10 Depth (Ft.)

Estimated 7Q10 Velocity (ft/sec)

0.750.30.3

Continuity Check:

(a): Multiply: Width x Depth x Velocity x .6463

(b): Enter 7Q10 at Model Start (Include Discharge) (MGD)

0.0430.0395

If the two numbers above differ by much, you have made some sort of error.

Review your data and revise your estimates.

Drainage Area at the Beginning of This Segment (Sq.Mi.)

Drainage Area at the End of This Segment (Sq.Mi.)

(Omit the drainage area of any tributaries that are included in this segment under the "Tributary at End" section below).

0.140.80

Elevation at the Beginning of This Segment (Ft.)

Elevation at the End of This Segment (Ft.)

1040800

The following data is based on the field inspection and you should estimate what the overall "average" segment will look like at the 7Q10 flow condition. You enter the number code that best describes what you saw for this segment.

Type of Cross Section

- 1 = Rectangular; 2 = Triangular; 3 = Deep Narrow U; 4 = Wide Shallow Arc;
- 5 = Irregular; 6 = No Defined Channel

1

DATA PREPARATION WORKSHEET

PAGE 2
(Continued)

General Character of Stream

1 = Mostly Straight; 2 = Moderately Meandering; 3 = Severely Meandering;
4 = No Defined Channel

Does This Segment Have a Pool and Riffle Character? (Y/N)

If "Y": Percent of the Length of This Segment That is Pools ÷ 100
Percent of the Length of This Segment That is Riffles ÷ 100
Estimated Average Depth of the Pools (Ft.)
Estimated Average Depth of the Riffles (Ft.)

Check that this is reasonable with the overall depth you entered on previous page:

(a): Enter the 7Q10 Depth (Ft.) (from previous page)

(b): Enter X Pool Length x Pool Depth

(c): Enter X Riffle Length x Riffle Depth

(d): Enter (b+c)/100

The values in (a) and (d) should be the same or very close.

General Bottom Type

1 = Sand; 2 = Silt; 3 = Gravel; 4 = Small Rock; 5 = Large Rock; 6 = Boulders

Sludge Deposits

1 = None; 2 = Trace; 3 = Light; 4 = Heavy

(This is organic sludge from an inadequate or malfunctioning STP. Do not confuse with silt deposits from other sources.)

Plants

1 = None; 2 = Few; 3 = Light; 4 = Heavy

(These are subaerged macrophytes or rooted plants in the waterway.)

Algae

1 = None; 2 = Only on Edges; 3 = On Entire Bottom

(This is visually evident algae growth in the water, e.g.- green filis, green filaments or green masses of algae attached to the bottom or in shallow parts of the bank.)

Does the Water Have an Evident Green Color? (Y/N)

(This is used as an indication of phytoplankton that one cannot normally see except by a general color imparted to the water by the floating cells.)

Tributary at End

If you defined the segment because there is a tributary at the end, complete the following:

Tributary Drainage Area (Sq.Mi.)

Tributary Flow (MGD) (Tributary D.A. x Gauge 7Q10 / Gauge D.A.)

NOTE! "Standard" background values will be used for this tributary (i.e. - BOD5 = 2 Mg/l, TKN = 0 Mg/l, D.O. = 90% of D.O. Saturation). If these values are not appropriate or the tributary has a discharge within 3 miles of the confluence with the stream being modeled, then redefine the segment as "3 - Discharge at End" and go to the next section.

Discharge at End

If you defined the segment because there is another discharge at the end, complete the following:

Discharge Name

Discharge Flow (MGD)

Discharge BOD5 (Mg/l)

Discharge TKN (Mg/l)

Discharge D.O. (Mg/l)

REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Eagle Eyrie Baptist Conference Center DISCHARGE
 TO Unnamed Tributary to James River

 THE SIMULATION STARTS AT THE Eagle Eyrie Baptist Conference Center DISCHARGE

***** PROPOSED PERMIT LIMITS *****

FLOW = .0395 MGD cBOD5 = 18 Mg/L TKN = 6 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

 THE SECTION BEING MODELED IS 1 SEGMENT LONG
 RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

***** BACKGROUND CONDITIONS *****

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
 THE DISSOLVED OXYGEN OF THE STREAM IS 7.639 Mg/L
 THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
 THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

***** MODEL PARAMETERS *****

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.56	0.643	20.000	1.600	0.550	0.000	920.00	22.00	8.488

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

***** RESPONSE FOR SEGMENT 1 *****

TOTAL STREAMFLOW = 0.0395 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
-----	-----	-----	-----	-----
0.000	0.000	6.000	45.000	12.990
0.100	0.100	5.704	44.256	12.911
0.200	0.200	5.473	43.525	12.833
0.300	0.300	5.295	42.806	12.755
0.400	0.400	5.160	42.098	12.677
0.500	0.500	5.061	41.403	12.600
0.560	0.560	5.016	40.991	12.554

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
05-24-1993 07:40:59

DATA FILE = EAGLE2.MOD

 REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Eagle Eyrie Baptist Conference Center DISCHARGE
 TO Unnamed Tributary to James River

 THE SIMULATION STARTS AT THE Eagle Eyrie Baptist Conference Center DISCHARGE

***** PROPOSED PERMIT LIMITS *****

FLOW = .0395 MGD cBOD5 = 19 Mg/L TKN = 6 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

 THE SECTION BEING MODELED IS 1 SEGMENT LONG
 RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

***** BACKGROUND CONDITIONS *****

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
 THE DISSOLVED OXYGEN OF THE STREAM IS 7.639 Mg/L
 THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
 THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

***** MODEL PARAMETERS *****

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	0.56	0.643	20.000	1.600	0.550	0.000	920.00	22.00	8.488

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

***** RESPONSE FOR SEGMENT 1 *****

TOTAL STREAMFLOW = 0.0395 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	6.000	47.500	12.990
0.100	0.100	5.666	46.715	12.911
0.200	0.200	5.405	45.943	12.833
0.300	0.300	5.203	45.184	12.755
0.400	0.400	5.050	44.437	12.677
0.500	0.500	4.935	43.703	12.600
0.560	0.560	4.883	43.268	12.554

THE STANDARDS ARE VIOLATED IN THIS SEGMENT

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
05-24-1993 07:39:11

DATA FILE = EAGLE2.MOD

 REGIONAL MODELING SYSTEM VERSION 3.2

MODEL SIMULATION FOR THE Eagle Eyrie Baptist Conference Center DISCHARGE
 TO Unnamed Tributary to James River

 THE SIMULATION STARTS AT THE Eagle Eyrie Baptist Conference Center DISCHARGE

***** PROPOSED PERMIT LIMITS *****

FLOW = .0395 MGD cBOD5 = 18 Mg/L TKN = 7 Mg/L D.O. = 6 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

 THE SECTION BEING MODELED IS 1 SEGMENT LONG
 RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

***** BACKGROUND CONDITIONS *****

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
 THE DISSOLVED OXYGEN OF THE STREAM IS 7.639 Mg/L
 THE BACKGROUND cBODu OF THE STREAM IS 5 Mg/L
 THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

***** MODEL PARAMETERS *****

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	0.56	0.643	20.000	1.600	0.550	0.000	920.00	22.00	8.488

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

RESPONSE FOR SEGMENT 1

TOTAL STREAMFLOW = 0.0395 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
-----	-----	-----	-----	-----
0.000	0.000	6.000	45.000	17.320
0.100	0.100	5.680	44.256	17.215
0.200	0.200	5.430	43.525	17.110
0.300	0.300	5.236	42.806	17.006
0.400	0.400	5.089	42.098	16.903
0.500	0.500	4.979	41.403	16.800
0.560	0.560	4.928	40.991	16.739

THE STANDARDS ARE VIOLATED IN THIS SEGMENT

REGIONAL MODELING SYSTEM
05-24-1993 07:42:21

Ver 3.2 (OWRM - 9/90)

DATA FILE = EAGLE2.MOD

WLA Analysis For: Eagle Eyrie Conf Cntr STP				Date: 08/05/03			
Stream: Uf James River				Effluent Information			
Mean Hardness =	46	mg/L		Mean Hardness =	46	mg/L	
Stream NH3 =	0	mg/L		Effluent NH3 =	0	mg/L	
90% Temperature =	25.5	C		90% Temperature =	25.5	C	
90% pH =	8.2	SU		90% pH =	8.2	SU	
Fractional 7Q10 =	0	MGD (100%)		Original Flow =	0.0395	MGD	
Fractional 1Q10 =	0	MGD (100%)					
Harmonic mean =	0	Carcinogen					
30Q5 Flow =	0	Non-carcinogen					
Annual Average =	1	Dioxin only					
R(iver),L(ake) or S(torm):	R	R, L, S					
Trout Present?	N	Y, N					
Public Water Supply:	Y	Y, N					
				Hardness			
				acute: 46			
				chronic: 46			
				7Q10 Ratio: 1			
				1Q10 Ratio: 1			
				Harmonic ratio: 1			
				30Q5 ratio: 1			
				Annual Average ratio: 26.316456			
				Mix Hardness			
				acute: 46			
				chronic: 46			
				* WLAa			
				Coefficient =			
				Acute IWC =			
				Chronic IWC =			
				0.99			
				1			
				1			

WLA Analysis For: Eagle Eyrie Conf Cntr STP				Date: 06/05/03	
Stream: UT James River				Effluent Information	
Mean Hardness =	46	mg/L		Mean Hardness =	46 mg/L
Stream NH3 =	0	mg/L		Effluent NH3 =	0 mg/L
90% Temperature =	25.5	C		90% Temperature =	25.5 C
90% pH =	8.2	SU		90% pH =	8.2 SU
Fractional 7Q10 =	0	MGD (100%)		Original Flow =	0.0395 MGD
Fractional 1Q10 =	0	MGD (100%)			
Harmonic mean =	0	Carcinogen			
30Q5 Flow =	0	Non-carcinogen			
Annual Average =	1	Dioxin only			
R(iver),L(ake) or S(torm):	R	R, L, S			
Trout Present?	N	Y, N			
Public Water Supply:	Y	Y, N			
				Hardness	
				Mix Hardness	
				acute: 46	acute: 46
				chronic: 46	chronic: 46
				7Q10 Ratio: 1	* WLAa
				1Q10 Ratio: 1	Coefficient = 0.99
				Harmonic ratio: 1	Acute IWC = 1
				30Q5 ratio: 1	Chronic IWC = 1
				Annual Average ratio: 26.316456	
				Aquatic Protection	
				Human Health Criteria	
				Freshwater Criteria	
Parameter and Form	Carcinogen?	Sort? (Y/N)	Acute Criteria	Chronic Criteria	PWS Other Waters
Radioactivity		n	None	None	None
Selenium		n	20	5	170
Silver		n	1.07	None	None
Silvex		n	None	None	50
Sulfate		n	None	None	250000
Temperature		n	32	32	None
Tetrachloroethylene		n	None	None	320
Toluene		n	None	None	3500
Total dissolved solids		n	None	None	6800
Toxaphene	C	n	0.73	0.0002	500000
Tributyltin		n	0.46	0.0073	None
Trichloroethylene	C	n	None	None	0.0075
Vinyl Chloride		n	None	None	0.73
Xylenes, total		n	None	None	0.0002
Zinc		n	60.61	54.89	0.007
					0.008
					NA
					810.0
					5300.0
					NA
					NA

Footnotes:

- All concentrations expressed as micrograms per liter (µg/L), except Ammonia.
- Ammonia (as mg/L) selected from separate tables, based on pH and temperature.
- Acute-1 hour avg. concentration not to be exceeded more than 1/3 years.
- Chronic-4 day avg. concentration not to be exceeded more than 1/3 years.
- Complete mix-mass balances employ 30Q5 for Non-carcinogens, and Harmonic Mean for Carcinogens.
- All flow values are expressed as Million Gallons per Day.
- Metals measured as Dissolved, unless specified otherwise.
- (c)-Indicates carcinogenic parameter.
- Public Water Supply-protects for fish and water consumption.
- Other Waters-protects for fish consumption only.
- Hardness expressed as CaCO3 (mg/L).
- All limitations are based on EPA's TSD Statistical approach.

6/6/2003 10:36:32 AM

Facility = Eagle Eyrie Bapt. Conf. Center STP

Chemical = ammonia

Chronic averaging period = 30

WLAa = 3.66

WLAc =

Q.L. = 1

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 3.66

Average Weekly limit = 3.66

Average Monthly Limit = 3.66

The data are: